Claussen 2-11

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Zeichen/Ref./Réf.	Anmeldung Nr./Application No./Demande n°./Patent Nr./Patent No./Brevet n°.
H.CLAUSSEN 2-11	02255820.9-2415-

Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire
LUCENT TECHNOLOGIES INC.

COMMUNICATION

The European Patent Office herewith transmits as an enclosure the European search report for the above–mentioned European patent application.

If applicable, copies of the documents cited in the European search report are attached.

☐ Additional set(s) of copies of the documents cited in the European search report is (are) enclosed as well.

The following specifications given by the applicant have been approved by the Search Division:
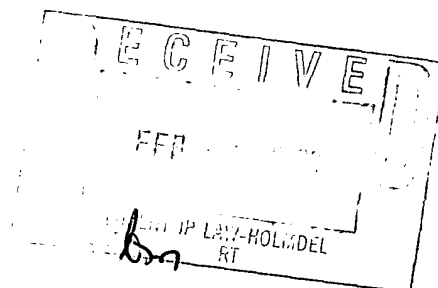
☐ abstract   ☐ title

☒ The abstract was modified by the Search Division and the definitive text is attached to this communication.

The following figure will be published together with the abstract: NONE

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REFUND OF THE SEARCH FEE

If applicable under Article 10 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.

EUROPEAN SEARCH REPORT

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	ISAKA M ET AL: "ON THE ITERATIVE DECODING OF MULTILEVEL CODES" IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS, IEEE INC. NEW YORK, US, vol. 19, no. 5, May 2001 (2001-05), pages 935-943, XP001101013 ISSN: 0733-8716	9	H04L1/00 H04L1/06 H03M13/25
Y	* sections I,II and IV * * figure 1 * * figure 7 *	1,2,5-8, 10	
X	WO 02 41594 A (BOSCH GMBH ROBERT ;HOFMANN FRANK (DE)) 23 May 2002 (2002-05-23)	9	
A	* page 3, line 21 - page 9, line 5 * * figure 2 *	2	
Y	WO 01 69873 A (QUALCOMM INC) 20 September 2001 (2001-09-20) * figures 1-3 * * page 5, line 24 - page 6, line 20 * * page 7, line 10 - page 11, line 13 *	1-8,10	
Y	TONELLO A M: "Space-time bit-interleaved coded modulation over frequency selective fading channels with iterative decoding" GLOBECOM'00. 2000 IEEE GLOBAL TELECOMMUNICATIONS CONFERENCE. SAN FRANCICO, CA, NOV. 27 - DEC. 1, 2000, IEEE GLOBAL TELECOMMUNICATIONS CONFERENCE, NEW YORK, NY: IEEE, US, vol. 3 OF 3, 27 November 2000 (2000-11-27), pages 1616-1620, XP002180266 ISBN: 0-7803-6452-X	3	
A	* figure 2 * * sections I and IV *	1,3,10	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

H04L
H03M

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	8 January 2003	Horstmannshoff, J

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
D,Y	LI X ET AL: "EFFECTS OF ITERATIVE DETECTION AND DECODING ON THE PERFORMANCE OF BLAST" GLOBECOM'00. 2000 IEEE GLOBAL TELECOMMUNICATIONS CONFERENCE. SAN FRANCISCO, CA, NOV. 27 - DEC. 1, 2000, IEEE GLOBAL TELECOMMUNICATIONS CONFERENCE, NEW YORK, NY: IEEE, US, vol. 2 OF 4, 27 November 2000 (2000-11-27), pages 1061-1066, XP001017247 ISBN: 0-7803-6452-X	4	
A	* figure 4 * * section III *	1,3-7,10	

TECHNICAL FIELDS
SEARCHED   (Int.Cl.7)

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	8 January 2003	Horstmannshoff, J

EPO FORM 1503 03.82 (P04C01)

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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08-01-2003

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
WO 0241594	A	23-05-2002	DE	10057282 A1	06-06-2002
			AU	2155502 A	27-05-2002
			WO	0241594 A1	23-05-2002
			EP	1260075 A1	27-11-2002
WO 0169873	A	20-09-2001	AU	4581401 A	24-09-2001
			EP	1264456 A2	11-12-2002
			WO	0169873 A2	20-09-2001

EPO FORM P0459

ABSTRACT / ZUSAMMENFASSUNG / ABREGE

02255820.9

A radio telecommunications system is provided operative to communicate digital data symbols with multilevel-coded modulation using higher than quadrature phase shift keying (QPSK) in a multiple-input multiple-output (MIMO) transmit environment. The system comprises a transmitter (1) and a receiver (2).

The transmitter (1) contains a means to split the data into a first block of more significant bits of symbols and a second block of less significant bits of symbols which are then separately encoded (a,b) and interleaved (c,c') for modulation by a modulator (d). This transmitter performs multilevel-coded modulation to provide a layered encoding scheme that enables unequal error protection for the transmitted bits.

The receiver (2) is operative to receive the multilevel-coded modulated signal via multiple-transmit antennas by iterative determination of soft estimates of bits followed by a hard decision as to what bit was intended. The receiver (2) comprises a first processor (3) operative to provide first soft estimates of bits of the received signal, and a second processor (13) operative to decode the first soft estimates and to provide second soft estimates of the bits. The receiver (2) also comprises a first combiner (11') operative to provide adapted first soft estimates to the second processor (13), the adapted first soft estimates of each bit being dependent upon the respective first soft estimate and a respective previous first soft estimate. The receiver (2) also comprises a second combiner (17) operative to provide third soft estimates back to the first processor for subsequent further decoding, the third soft estimates of each bit being dependent upon the respective second soft estimate and a respective previous second soft estimate.